

**ABSTRACT OF THE DISCLOSURE**

A unique optical cavity for NDIR gas sensor module and test results for the CO<sub>2</sub> concentration from 100 ppm to 2,000 ppm are disclosed. The proposed sensor module shows the maximum peak voltage at 500 ms pulse duration, however, it has a maximum 5 fractional voltage changes at 200 ms pulse duration with 18,000 times amplification gain. From 100 ppm to 2,000 ppm, the voltage difference of sensor module (V) is 200 mV at 200 ms pulse duration and 3 sec. turn-off time.